DIAZOMETHANE

Diazomethane is a federal hazardous air pollutant and was identified as a toxic air contaminant in April 1993 under AB 2728.

CAS Registry Number: 334-88-3 CH_2N_2

Molecular Formula: CH_2N_2

Diazomethane is a yellow gas at room temperature. Solutions containing undiluted and concentrated diazomethane may explode violently. Gaseous diazomethane may explode if heated. It is soluble in ether and dioxane and will decompose slowly in either solvent. It will decompose more rapidly if water or alcohols are present (Merck, 1989).

Physical Properties of Diazomethane

Synonyms: azimethylene; diazirine; azomethylene

Molecular Weight:	42.05
Boiling Point:	-23 ^oC
Melting Point:	-145 ^oC
Density/Specific Gravity:	1.45 at 20/4 ^oC
Conversion Factor:	1 ppm = 1.72 mg/m^3

(HSDB, 1991; Merck, 1989; Sax, 1989)

SOURCES AND EMISSIONS

A. Sources

Diazomethane is used as a methylating agent for acidic compounds (HSDB, 1991).

B. Emissions

No emissions of diazomethane from stationary sources in California were reported, based on data obtained from the Air Toxics "Hot Spots" Program (AB 2588) (ARB, 1995a).

C. Natural Occurrence

No information was found about the natural occurrence of diazomethane in the readily-available literature.

AMBIENT CONCENTRATIONS

No Air Resources Board data exist for ambient measurements of diazomethane.

INDOOR SOURCES AND CONCENTRATIONS

No information about the indoor sources and concentrations of diazomethane was found in the readily-available literature.

ATMOSPHERIC PERSISTENCE

Diazomethane will photolyze in the troposphere to yield N_2 plus a CH_2 radical (Atkinson, 1995). No information on the atmospheric half-life or lifetime was found in the readily-available literature.

AB 2588 RISK ASSESSMENT INFORMATION

Diazomethane emissions are not reported from stationary sources in California under the AB 2588 program. It is also not listed in the California Air Pollution Control Officers Association Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines as having health values (cancer or non-cancer) for use in risk assessments (CAPCOA, 1993).

HEALTH EFFECTS

The most probable route of human exposure to diazomethane is inhalation.

Non-Cancer: Diazomethane is a highly reactive methylating agent, as well as a potent eye and respiratory irritant and sensitizer. Symptoms may include irritation of the eyes, denudation of mucous membranes, cough, asthmatic symptoms, pulmonary edema, dizziness, weakness, headache, chest pains, fever, moderate cyanosis, tremors, hepatic enlargement, and shock. Overt symptoms may be delayed (Olson, 1994). The United States Environmental Protection Agency (U.S. EPA) has not established a Reference Concentration (RfC) nor an oral Reference Dose (RfD) for diazomethane (U.S. EPA, 1994a).

No information is available on adverse reproductive or developmental effects of diazomethane in humans or animals (U.S. EPA, 1994a).

Cancer: No information is available on the carcinogenic effects of diazomethane in humans. Increased incidences of lung tumors have been observed in rats and mice exposed to diazomethane by inhalation, and in dermally exposed mice. The U.S. EPA has not classified diazomethane as to its carcinogenic potential (U.S. EPA, 1994a). The International Agency for Research on Cancer has classified diazomethane in Group 3: Not classifiable (IARC, 1987a).